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Abstract

The invention relates to a method for mounting a flap (3) on a workpiece (1) in a precisely positioned fashion, in particular for mounting a vehicle door on a vehicle body. For this purpose, a robot guided gripping tool (5) is used, which gripping tool (5) has a securing device (14) for holding the flap (3) and a sensor system (18) which is permanently connected to the gripping tool (5). In a first step, the gripping tool (5) is moved, within the scope of a positioning phase (A-2), from a proximity position (37), which is independent of the position of the workpiece (1) in the working space (27) of the robot (7), into a mounting position (29) in which the flap (3) which is held in the securing device (14) of the gripping tool (5) is oriented with respect to the workpiece (1) in a precisely positioned fashion. In order to move into the mounting position (29), an iterative closed-loop control process is run through, in the course of which firstly an (actual) measured value of the sensor system (18) is generated, which value is compared with a (setpoint) measured value which is generated within the scope of a setup phase. A movement vector of the gripping tool (5) is calculated from the difference between the (actual) measured value and (setpoint) measured value using a Jacobi matrix calculated within the scope of the setup phase, and the gripping tool (5) is moved by an amount equal to this movement vector. The flap (3) is then attached to the workpiece (1) using attachment elements (9). In order to carry out this positioning task it is possible to dispense with metric calibrations of the sensor system (18) of the gripping tool (5).

(Figure 1)